Role of Ontologies in Performance Evaluation

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There are many possible roles that an ontology may have evaluating the performance of intelligent systems. I only list some of the more obvious roles that I see

Correctness of Results

Solutions to problems and answers to questions from the system being evaluated may not always be what is expected. For example, an expected answer might be *4-wheel vehicle*. The system being evaluated might respond go-cart, car, truck, vehicle, tank, ice cream bar, or any one of a number of answers. Car and go-cart are probably correct answers. Truck may or may not be correct, but is certainly a vehicle. Tank is a vehicle, but not wheeled. Ice cream bar would not even be close. An ontology would help make those decisions rapidly.

Was the Explanation Correct

When performing a test of intelligence, the tester may want to see an explanation of how the answer was derived. An ontology can be used to

1. determine whether or not the knowledge used in an explanation is consistent (may be indeterminate within the time allotted);
2. determine whether or not the steps are logical; and
3. whether or not a better explanation exists.

Why did the System being Evaluated do X?

Sometimes judgements of performance are made based upon the behavior of the system. If we understand why the system is behaving as it is, then there is not need to ask for an explanation. However if we do not understand then we need to ask why. An ontology can be used to understand the behavior of a system being evaluated and if it doesn't then to ask why. If the system being evaluated has made an incorrect assumption in it's explanation then an ontology could be used to probe the rationale for the poor assumption.

How Optimal was the Answer?

Different systems have different quantities of knowledge, represented in different ways. Given absolute or total knowledge of the problem domain, then how good was the answer, solution, explanation given by the system compared with the best possible answer, solution, explanation for the problem/question.